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The Effectiveness of Integrative Approach, Fernald Multi-Sensory Technique on Decrease Reading Disability

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Abstract

Problem Statement: Learning disabilities, or learning disorders, are an umbrella term for a wide variety of learning problems that is not a problem with intelligence. The World Health Organisation defines learning disabilities as 'a state of arrested or incomplete development of mind'. Reading disorder is a learning disorder that involves significant impairment of reading accuracy, speed, or comprehension to the extent that the impairment interferes with academic achievement or activities of daily life.

Purpose of Study: Treatment approaches of reading disability vary from visual stimulation to special diets to enhanced reading instruction. The research purpose is comparing the effectiveness of an Integration approach with Fernald multi-sensory method For decrease Reading disabilities in elementary male students.

Research Methods: In a quasi-experimental study, 30 students were chosen among 139 reading disability students who came to a treatment on LD Clinic in Arak city. They were evaluated with Reading Level Test and Wechsler Intelligence Test for Children and then randomly appointed to two groups: Integrative Approach treatment and Fernald Multi-Sensory. All groups improved their reading skills. They were treated for 12 sessions, then, they were evaluated with RLT and WIT. The data were analyzed using ANCOVA test.

Findings: Research results showed that the Integration approach was more effective from Fernald method for reducing Reading disabilities in reading, understanding, Phonemics, and correct reading areas.

Conclusions: Considering the role of Integrative treatment in LD students, we recommend that, psychologists should integrate general categories of developmental, corrective, and remedial techniques as integrated approach for reading disability.

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Keywords: Integration approach, Fernald multi-sensory method, Reading disability, Elementary students

1. Introduction

Failure in learning a heterogeneous group of children in diverse areas showed that they have many problems. reading disabilities is the most important problems. These problems may likely cause life time effects for some one who engaged within them and these issues are more problematic than reading , writing, accounting, and some fields

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such as health, mental hygiene, interpersonal relations, education, etc (Raghavan and colleagues, 2004). Children often sent to school with the expectation that at least they learn how to read and write. Children must learn to reading for writing, and writing for reading and understanding. Therefore, reading is so important ,that it, is impossible to acquire other academic skills without it. Disability of child to read will profoundly affect his adaptive behavior. findings showed that one third of children who have learning disabilities Expeled from school (Wagner, Blakorby, 1996, quoted from Biabangard, 2002).

one of the serious problems among children and students is apparently all physically and emotionally .relationships with others, development of intelligence , and nervous system are safe but in school ages they seriously engaged in reading and writing problems, mathematics, problem solving and so on . These inabilities may remain without a diagnosis or incorrect diagnosis for many years. In many circumstances may often parents of this group are not aware of the reasons and causes of learning disabilities, and by using the incorrect method cause more complex problem (Tabrizi, 2009). The main features of reading disability are deficiencies in reading skills, which is not justified with low intelligence, and learning problems (Lotfi Kashani and Vaziri, 2009).

According to causes of reading disability, we can use different methods to correct it (Snow et al, quoted by Naaemy, 2007). Methods used to treat learning disabilities are based on the view their authors. Developmental theories express immaturity as the main factor causing learning disabilities (Diamond, 1983, and Fleveling, 1980, quoted Lerner, 1997). Behavioral theories believe that learning is basis of behaviors. They argued that behaviors have three components: stimulus, response and outcome .common methods in behavioral approach are direct instruction .which its components are: precise explanation of behavior, behavioral aims, continuous measuring of students' performance, using feedbacks, and precise organizing of curriculum contents.

Theories of cognitive show the method of information processing. In this perspective brain function has been compared with computer. in humans ,Inputs consist of information received from the different senses like hearing, sight, touch and so forth . Processing functions are: thinking, association, memory and decision making, and outputs be composed of learning action and behavior. Based on this, theorists like Fernald argued that received sensory information has been flaws because of learning disabilities .He based his methods on sensory motor foundations (Omidvar, 2006). In cognitive perspective, cognitive and meta-cognitive skills are important in learning, some strategies are programming strategies, control and monitoring strategies, and regularizing strategies (Saif, 2009).

The psychoanalytic approach proponents believe that if child cannot perform his duties, instead of foster his self-esteem and values of "I". blames herself. This child has a negative self-concept and parents, teachers and others (Saif Naraghi and Naderi, 2004) .Till now all methods for treat and relief learning disabilities only emphasize on some effective factors in reading (lerner,1997).

Most common treatment methods focused on children. The usual method, at first, is evaluation of child learning level. After revealing the weaknesses of children with using different methods (depending on the desired point of view), treatment of reading disabilities will begin. This method is based on integration approach that considers learning disability as a system. According to the above, for treatment reading disability all factors (child, environment, and training program) should be considered simultaneously .We could consider these factors as sources of learning disabilities. Due to the different ways to solve the problem learning disabilities access to the most effective way is important. if the effectiveness of the integration approach prove, we can use it for learning disables' students . Accordingly, the main purpose of this study is to examine the impact of an integration approach on reducing Learning disabilities and compare the effectiveness of an integration approach to reduce Fernald method for reducing learning disabilities.

During the years, many methods were used for treatment learning disabilities. These treatments were effective for learning disabilities and other learning disabilities. Zigler and Caffin (2005), Juler (2004), Nader Hazeri (2006), Jana Abady (2007), Tahan Kar Dezfooli (2006), Djafari (2006), Kakaie (2002) and Shahin Yelagh and colleagues (2002) in their research demonstrated that effectiveness of Fernald's multi-sensory method on reducing the reading and dictate disabilities.,Baa Ezzat (1997), schaub and Walren (2008), Harris and Robinson and Chang and Burns (2005) in their research showed that attention to solve emotional and psychological problems of students ,and interactions of families with school, reduced Learning disabilities.

Yaghoobi (2006), Ali Aghdam(2008) and Mazloomi (2011) Akar and Aktamis (2010), Actamis and Dermitzaki and Goudas (2009), Swalander and Taube (2007) in their research shows that self-regulatory and meta-cognitive strategies are very important for increasing level of education, increase comprehension and decrease learning disabilities. In other research related to phonemics and its impact on learning , Soleimani et. al (2009), Mostaghim Zadeh and Soleimani (2005) (Brennan and Ireson 1997, Bradley and Brayant, 1983, Wagner 1988, quotes by Mostaghim Zadeh and Soleimani (2005) all showed effect of phonemes education in improving reading.

Methods

statistics population in this study were all boy students of 3rd grade of elementary school with reading disabilities in Khoram Abad(2011).population size was 139, of which 30 were randomly selected and then randomly arranged in two groups with 15 members. Research method was Fernald's multi-sensory and integration approach, which randomly applied for groups. Recent research method was semi- experimental, and research project, contained two groups with pre-test and post-test . for measuring ability to read used from diagnostic test of reading level in Isfahan city. This test had three subscales. Reliability coefficient of Reading accuracy was 94.0, reliability coefficient for understanding of reading was 51.0, and the reliability coefficient for awareness of Phonology was 84.0 .This test is made by Azizian and Abedi (Azizian and Abedi, 2003).

In recent research score of students in reading test and its subscales were dependent variables and multi –sensory method of Fernald and integrative were independent variables. At first, implemented pre- test for both groups and next members of each groups passed special instructional methods. Detail of this research present here:

In multi –sensory methods for sight, hearing, feeling, and movement were used with new words and spelling. this method increase child learning abilities(Baradari,1998).below each instructional sessions are presented in detail:

First step in each program in class and clinic was present a description of special methods for children that increased reading, writing, and spelling abilities. informed children about this matter that others had similar problems were effective for their positive attitudes. In second steps asked for children to learn, select, and distinguish (read) each words that they wanted (without attention to its length) with regard to these instructions:

- 1) The words written on the board and read by the teacher, then the student repeats it . reading by teacher and student by student repeated 8 times (a word that was written on board by teachers with large marker and showed to the student); 2) Teacher explained meaning and concept of word by using sentences and short stories for the student and encouraged he to sentences-making; 3) at this stage was asked of the child to wrote a few words on the paper when read aloud learning. This was repeated at least 3 to 4 times. Repeat this continued procedure until the child wrote without looking at that word; 4) At this stage was asked of child to wrote without looking at the pattern . This method repeated at least 5 times; 5) At the end of each session when the child understood the fact that he could write ,he encouraged to use words that are trained to wrote a fiction. In these circumstances, if the teacher was required provide necessary words for him; 6) Stories written by child, typed by teacher and took him to read it; and 7) after the work was accomplished and child learned how to use correct words, he wrote each word on a card and arranged them alphabetically with teacher.

Integration approach places more emphasis on the important role of task and environmental factors, and especially family circumstances, and behavior parents with child, and their interaction with teachers in school . Integration approach held in 24 sessions which four sessions devoted to parents, and 20 sessions dedicated to training. the first training course started with consultation for parents. The second training session was held after the end of the fifth session, and the third meeting was held after the end of the tenth session and the Fourth Session after the Fifteenth training session. First session: During first parent consultation, session teacher introduced herself and explained about programs. He informed them and created the appropriate atmosphere for the start of training. He remind them that other children have similar problems and by using this method they could eliminate their problem. Second Session: Strengthening the auditory perception (awareness of sounds). Third session: Repeating training of second session with use of more complex words and strengthening memory by presenting different images. Fourth Session: Repeat the previous exercise sessions, boost visual memory and enhance perception and visual discrimination. Fifth Session: strengthen auditory memory , enhance visual perception and visual discrimination. Sixth ,seventh ,and eighth Sessions, training of second session, training visual memory, training of auditory memory, exercises the memory sequence, training the perception visual discrimination, exercises involving reading words and sentences

Ninth session: training specify reading goals. Tenth session, prediction of time to study and reading and specify reading speed, Eleventh session, education focus, Twelfth Session: Analysis of how learning to deal with learning issues, Thirteenth Session: Selecting learning strategies (cognitive strategies) Fourteenth Session: inspect and modify text in order to compensate for bugs (evaluation of progress). Fifteenth Session: Education questioning and self-questioning, Sixteenth Session: Control of time and time management in study and learning, Seventeenth session: training self-regulation., Eighteenth session: bilateral training, Nineteenth session: repeating Activities of eighteenth session, Twentieth session: Review of learning texts. It should be noted that in some cases if the teacher wanted applied individual counseling sessions with students engaged with emotional problems.

Findings

Before the test statistical hypothesis first, was examined presuppositions of parametric tests. These presuppositions included randomizing data, and normalizing the data and assume equality of variance. The test results suggest the existence of default test was appropriate. Results showed that there were a homogenous regression slopes that showed possibility of covariance analysis. In the present study tested conclusions of research hypothesis.

The main hypothesis: integrative approach is more effective in reducing the reading disability than Fernald method.

Table 1:
Summary of covariance for study effect of methods in reading scores with control of pre- test

Source	Ss	df	Ms	F	Sig.	Eta
Intercept	4993	1	4993	111.2	0.001	0.815
Main effect of treatment	2359	1	2359	52.54	0.001	0.661
Error	1212	27	44.9			

Table 1 shows that with remove pre-test score as a covariance variable, the main effect of treatment variable on post- test scores will be significant. ($F_{1,27}=52.54, P=.000, \eta^2=.661$).

Table 2:
Summary of covariance for effect methods on reading accuracy scores with control of pre-test

Source	Ss	df	Ms	F	Sig.	Eta
Intercept	978.75	1	978.75	126.7	0.001	0.824
Main effect of treatment	474.5	1	474.5	61.41	0.001	0.659
Error	208.58	27	7.72			

Table 2 shows that with remove pre-test score as a covariance variable, the main effect of treatment variable on post- test scores will be significant. ($F_{1,27}=61.41, P=.000, \eta^2=.695$).

Table 3:
Summary of covariance for effect methods on understanding reading scores with control of pre-test

Source	Ss	df	Ms	F	Sig.	Eta
Intercept	781.8	1	781.8	112.7	0.001	0.807
Main effect of treatment	63.69	1	63.69	9.189	0.001	0.254
Error	208.58	27	6.93			

Table 3 shows that with remove pre-test score (understanding of reading) as a covariance variable, the main effect of treatment variable on post- test scores for correct reading will be significant. ($F_{1,27}=9.181, P=.000, \eta^2=.254$).

Table 4
Summary of covariance for effect methods on phonemics scores with control of pre-test

Source	Ss	df	Ms	F	Sig.	Eta
Intercept	2035.38	1	2035.38	101.60	0.001	0.790
Main effect of treatment	243.64	1	243.64	12.162	0.002	0.311
Error	540.88	27	20.03			

Table 4 shows that with remove pre-test score (phonemics) as a covariance variable, the main effect of treatment variable on post- test scores for phonemics will be significant. ($F_{1,27}=12.162, P=.000, \eta^2=.311$).

Discussion

The ability to read in this study by using reading tests measured in Isfahan. This test has three subscales (within the accuracy of reading, understanding, and Phonemics). Most reading tests which used before only studied only one field, and others only acquired one final score for learning abilities. Applied intervention in integration approach contain collection of interventions, whereas past research mainly focus on some part of effective factors. Therefore, interpretation of conclusions was based on research that concentrated only on special fields. Results show that This

result was compatible with previous research results. An integration approach based on the reading disability is most effective than Fernald method.

Rahimi Zadeh (2002) showed that one of the causes of educational failure is lack of proper interaction between families, teachers and students. BaEzzat(1997) concluded that strategies of learning instruction increased learning and memory. Ansari (2009) argued that mixed learning strategies Increased self-efficacy and academic motivation learning in high school boy students..Ali Aghdam (2004) found similar results like Amini (2003).

Swalander and Taube (2007) in their study on 4018 students observed that between use of self-regulatory strategies and their learning were positive and significant relation. First hypothesis: integration approach to reduce the reading disability (accuracy of reading) is more effective than Fernald method The results of test this hypothesis showed that reduction of reading disability (accuracy of reading) in people who experienced integration method was more effective than Fernald method .conclusion of this hypothesis is similar to these researches: Yaghoobi(2007), and Schaub and Walren (2008) ,Rahimi Zadeh (2002) Mazloomi, (2011)

Second hypothesis: integration approach to reduce the reading disability (understanding) is more effective than Fernald method .According to the results of testing this hypothesis, previous research results are consistent with the results of this study. For this issue we can refer the following research: Mehrnezhad (1999), Mesrabady (2001), Dehghani Firouz Abadi (2008), Hedayat (2009), Pakdaman Savojy (2002). Third hypothesis: integration approach to reduce the reading disability (phonemics) is more effective than Fernald method . Results show that the hypothesis is confirmed . This result is fully consistent with the results of research done in the past such as the following research: Soleimani et.al (2009), MostaghimZadeh et.al (2005), Brennan and Ireson (1997), Bradly and Brayant (1983), Wagner (1988), quotes of MostaghimZadeh and Soleimani (2005).

Conclusions

Conclusions of main hypothesis and three secondary hypothesis showed that integration approach to reduce the reading disability (1-accuracy of reading, 2- understanding,3- phonemics) is more effective than Fernald method. Privilege of integration approach is that it systematically encounter with learning disabilities, and simultaneously pay attention to child, task, and learning environment. this effective method unlike integration approach there is no attention to emotional and psychological problems of children , and environmental factors which effective in learning such as interaction between parents and teachers. Finally should say: Integration approach is more effective than Fernald methods in reduce reading disabilities.

Reference

- Elizabeth H.; Ilvard, Frank, and Er, Brown. (1989). Distinguish and recognition learning disabilities (translated by R. Baradari). Tehran: (1994).
- Omidva. MAhmad. (2004). Special failure in learning. Mashhad
- Amini, Shahriar. (2002). The role of self-efficacy, self-regulatory and self-esteem high school students' academic achievement Shahrekord city. . Tabatabai University.
- Ansari, Amin. (2009). Integration strategies and self-regulatory efficacy beliefs in academic motivation and incentive in the first year of high school boys self-regulatory knowledge in Khondab city. Islamic Azad University of Arak.
- Baezzat, fereshteh. (1997). Effect of teaching learning disabilities strategies in memory of mentally retarded children. Tehran University.
- Biabangard, Ishmael. (2002). Guide parents and teachers in education and family education. Tehran: Islamic culture publication.
- Pakdaman Savjy, Azar. (2002). Effects of metacognitive strategy training in the knowledge students with learning disabilities. Special Education publication, (pp 15, 31-20).
- Tabrizi, Mustafa. (2009). learning disabilities treatment for dictate programs. Tehran: Fara Ravan Publication.
- Djafari, Niki. (2006). Evaluation of teaching metacognitive strategies (self learning) to improve problem-solving in children with learning disabilities (failure in accounting) -8, 9 and 10 years old- in Tehran province. M.A paper. Islamic Azad University of Tehran.
- Janabady, Hussein. (2007). Compare the effectiveness of rehabilitation methods learning disabilities«Kepar», "Fernald" and "Sina" to treat special learning disabilities (reading and spelling) in third elementary school grade . Educational Psychology PhD thesis. Tabatabai University.
- Dehghani Firoozabadi, Marzieh. (2008). Compare the effectiveness of teaching and learning strategies in girl students with learning disabilities. M.A thesis. University of Isfahan.
- Soleimani, Zahra, et al. (2009). The relationship between phonological awareness and rapid automatized naming with reading scores of first-grade students in Tehran -. Audiologist magazine. 18, 1-2, row, 32-31, 25-18.
- Saif ,Ali Akbar. (2009). Modern educational Psychology . Psychology of Learning and Teaching (Sixth Edition). Tehran: Doran Publication.

- Saif, Ali Akbar. (2009). learning and study methods (second edition). Tehran: Doran Publication.
- Saif Naraghi, Maryam, and Naderi, Ezatollah. (2004). Psychology and Education of Exceptional Children. Tehran: Arasbaran.
- Shhny, Yeylagh, Manijeh et al. (2002).study of epidemiology of learning disabilities in Ahvaz city(girls and boys elementary grade Journal of Educational Sciences and Psychology Shahid Chamran University. 3 and 144, 4-129.
- Than Kar Dezfuli, Maryam. (2006).compare between Fernald multi-sensory method and Kart understanding-motor method in reducing dictate disabilities of students . Islamic Azad University of Ahvaz.
- Azizian, Marzieh and Abedi, Mohammad Reza. (2003). Diagnostic test of reading levels. Isfahan: Isfahan Education Organization, Research Council.
- Ali Aghdam, Asghar. (2008). Effectiveness of teaching learning strategies in goal orientation and self-regulatory knowledge in secondary grade . Educational Psychology PhD thesis. Tabatabai University.
- Kakaie Eftekhar. (2002). Review the effectiveness of multi-sensory teaching methods to improve performance in basic reading, second and third grade in primary school of Ilam. The letter learning. Azzahra university.
- Lotfi and Kashani, Farah and Vaziri, Shahram. (2009). abnormal child psychology. Tehran: Arasbaran.
22. Mostaghimzadeh,Elham, and Soleimani, Zahra. (2005). Phonology awareness training effect on reading ability of primary school girls with low learning capacity. learning Journal of news in Cognitive Science. 7, No. 2, 28-22.
- Msrabady, Javad. (2001). Educational effectiveness of learning strategies (cognitive and metacognitive) on reading speed, learning and comprehension of different texts. Tabatabai University.
24. Mazloomi, Akram. (2011). Effective teaching strategies, assessment as learning and interacting with families on academic achievement and self-concept of third grade(female students) in Arak city. Islamic Azad University of Arak.
- Mehrmezhad, Hayedeh. (1999). Relationship and the role of metacognitive knowledge in reading comprehension of third and fifth grade(elementary school students) . Tehran University.
- Nader Hazrey, Roghieh. (2006). the impact of Fernald's Multi-sensory approach to reduce Learning disabilities knowledge in elementary school students of Tabriz city. Tabriz University.
- Naaemi, Ali Mohammed. (2007). Psychology of teaching reading. Mashhad: Astan- E - Quds –E-Razavi.
28. Yaghoobi, Abolghasem.. (2006). Effect of Metacognitive reading strategies to improve student performance and teaching effectiveness in reading (Elementary School fourth and fifth grade). (Educational Psychology PhD thesis). Tabatabai University.
- Acar, E. G., & Aktamis, H. (2010). The relationship between self-regulation Startegies and Prospective elementary school teachers Academic achievement in mathematics teaching course. *Procedia social and behavioral sciences*, 2, 5539-5543.
- Dermitzaki, I., Leandari, A., & Goudas, M. (2009). Relations between young students' strategic behaviours, domain-specific self-concept, and performance in a problem-solving situation. *Learning and Instruction*, 19, 174-157.
- Harris, R. G., robinson, J., chang, F., & burns, B. (2007). Characterizing preschool children's attention regulation in parent-child interaction: the roles of effortgul control and motivation. *Journal of applied developmental psychology* 28. 25-39.
- Juler, C. M. (2002). Learning disabilities. *Journal of exceptional children*. 42: 254.
33. Lerner, J. W. (1997). Learning disabilities: theories, diagnosis and teaching struching strategies. Boston, MA: Houghton Mifflin.
- Raghavan, R., & et al. (2004). Assessing the needs of people with learning disabilities and mental illness: development of a learning disability version of the cardinal needs schedule. *Journal of intellectual disability research*, 48: 25-36.
- Schaub, m., & Walren, m. (2008). Infants in group care: Their interactions with professional caregirers and parent Acroaa the second of life. *Infant behavior & development* 31. 181-189.
- Swalander, I., & taube, k. (2007). Influences of family based prerequisites, reading attitude, and self-regulation on reading ability, 32, 206-230.
- Zigler, a. s. (2005). The improvement of reading comprehension of the second grad at-risk. Student using multisensory methods of instruction. *Journal of special education*. 57: 324.